

The opinion in support of the decision being entered today was not written  
for publication and is not binding precedent of the Board.

## UNITED STATES PATENT AND TRADEMARK OFFICE

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### BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

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Ex parte HIROSHI TAKANASHI  
and TOMOYA KUDO

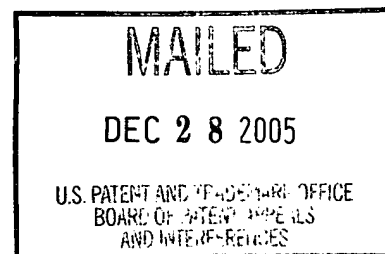
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Appeal No. 2006-0092  
Application No. 09/739,750

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ON BRIEF

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Before WALTZ, JEFFREY T. SMITH and FRANKLIN, Administrative Patent Judges.  
JEFFREY T. SMITH, Administrative Patent Judge.

### DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1 and 3-5, all of the pending claims. (Brief, p. 2). We have jurisdiction under 35 U.S.C. § 134.

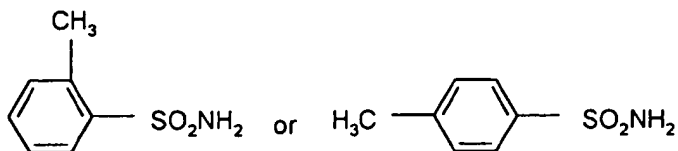
### BACKGROUND

The present invention relates to a negative-working photoresist composition.

According to Appellants, the composition provides improved depth and resolution.

(Brief, p. 2). Appeal claim 1 is reproduced below:

1. A negative-working photosensitive composition comprising:
  - (A) a film-forming polymer
  - (B) an unsaturated compound having a radical polymerizable ethylenic double bond,
  - (C) a photopolymerization initiator,
  - (D) a thermal polymerization inhibitor, and
  - (E) at least one member selected from compounds represented by the following formula:



in an amount of 1.0 - 2.0 wt% based on the weight of the photosensitive resin composition (as solids).

The Examiner relies on the following references in rejecting the appealed claim:

Pine	4,361,640	Nov. 30, 1982
Kunita et al. (Kunita)	5,703,140	Dec. 30, 1997
Ichikawa et al. (Ichikawa)	5,744,282	Apr. 28, 1998
Tanaka et al. <sup>1</sup> (Tanaka) (Published Japanese Patent Application)	JP 2-84653	Mar. 26, 1990

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<sup>1</sup> An English language translation of this document has been supplied to the record.

The Examiner rejected the subject matter of claims 1 and 3-5 under 35 U.S.C. 103(a) as unpatentable over Pine. (Office Action, Paper No. 7, mailed June 19, 2002). Claims 1, 3, and 4 stand rejected under 35 U.S.C. 103(a) as unpatentable over Tanaka and Kunita. Claim 5 stands rejected under 35 U.S.C. 103(a) as unpatentable over Tanaka, Kunita and Ichikawa.<sup>2</sup> (Answer, pp. 3-7). We affirm the rejections.

Rather than reiterate the conflicting viewpoints advanced by the Examiner and the Appellants regarding the above-noted rejections, we make reference to the Answer (mailed November 4, 2003) and the Office Action of Paper Number 7 (mailed June 19, 2002) for the Examiner's reasoning in support of the rejections, and to the Brief (filed July 21, 2003) and the Reply Brief (filed January 5, 2004) for the Appellants' arguments there against.

#### OPINION

Upon careful review of the respective positions advanced by Appellants and the Examiner, we affirm, for the reasons advanced by the Examiner, and add the following primarily for emphasis.

When an invention is defined by providing ranges for the amount of the various components, a *prima facie* case of obviousness arises when the ranges of a claimed

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<sup>2</sup> The Examiner has withdrawn the rejection of claims 1 and 3-5 under 35 U.S.C. 112, 1<sup>st</sup> paragraph. (Answer, p. 6).

composition overlap the ranges disclosed in the prior art. See *In re Peterson*, 315 F.3d 1325, 1329 (Fed. Cir. 2003); *In re Geisler*, 116 F.3d 1465, 1469 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990); *In re Malagari*, 499 F.2d 1297, 1303 (CCPA 1974). Where the "claimed ranges are completely encompassed by the prior art, the conclusion [that the claims are *prima facie* obvious] is even more compelling than in cases of mere overlap." *Peterson*, 315 F.3d at 1330. Even without complete overlap of the claimed range and the prior art range, a minor difference shows a *prima facie* case of obviousness. *Haynes Int'l v. Jessop Steel Co.*, 8 F.3d 1573, 1577 n.3, 28 USPQ2d 1652, 1655 n.3 (Fed. Cir. 1993).

In this case, the Examiner found that the Pine reference establishes *prima facie* case of obviousness because the ranges of the components in the photosensitive composition of Pine overlap [sic, encompass] the ranges of appealed claims 1 and 3. (Paper No. 7, pp. 5-9). We affirm.

When the Examiner has established a *prima facie* obviousness, the burden then shifts to the applicant to rebut. *In re Dillon*, 919 F.2d 688, 692, 16 USPQ2d 1897, 1901 (Fed. Cir. 1990) (en banc). Rebuttal may take the form of "a comparison of test data showing that the claimed compositions possess unexpectedly improved properties . . . that the prior art does not have, that the prior art is so deficient that there is no motivation to make what might otherwise appear to be obvious changes, or any other argument . . . that is pertinent." *Id.* at 692-93, USPQ2d 1901.

The Appellants assert that Table 1 on page 23 of the specification exhibits evidence of unexpected results. The Appellants also rely on the 37 CFR 1.132 declarations filed September 25, 2000 and May 23, 2000, for substantiating the evidence of unexpected results. (Brief, p. 6).

Appellants' argument is not persuasive for several reasons. Appellants do not discuss or explain why Appellants believe that the data in the specification and the declaration filed September 25, 2000, supports the non-obviousness of the claimed subject matter. Specifically, the declarant states "[t]he purpose of the experiment is to demonstrate that unexpected results of the invention are exhibited in the claimed range of 0.001 - 0.3 wt.% of component (E) of the present invention. . . ." (Paragraph 1). This range is not encompassed by the claimed range of 1.0 - 2.0 wt.% (claim 1) or the range of 1.0 - 1.5 wt.% (claim 3) for component (E).<sup>3</sup> The specification, paragraph [0055], states that the "Examples demonstrate that unexpected results of the present invention are exhibited in the claimed range or 3.5% or less of component (E) . . ." While this range encompasses the ranges of claims 1 and 3, there is no discussion of the significance of the narrower claimed ranges.

The burden is on Appellants to show why the comparative data establishes unexpected results. See *In re Klosak*, 455 F.2d 1077, 1080, 173 USPQ 14, 16 (CCPA

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<sup>3</sup> We further note that declarant, paragraph [4] states "[a]s shown in Table I and Fig. I above, it is verified that remarkable effects of the invention of deep depth of non-printing areas and excellent resolving properties were exhibited in the claimed range of 0.001 - 0.3 wt% of component (E) . . ."

1972). Appellants have not shown why these comparisons are believed to be with the closest prior art. See *In re Burckel*, 592 F.2d 1175, 1179, 201 USPQ 67, 71 (CCPA 1979). The results shown in Table 1 and Fig. 1 exhibit the amount of component (E) added to the composition and evaluates by the depth ( $\mu\text{m}$ ) of non-printing areas of independent fine lines of 150  $\mu\text{m}$  of the printing plates. (Specification, paragraph [0059] and Declaration, page 4). The data presented in the claimed range of 1% to 2% provides values in 0.25% increments. However, the evidence does not present a comparison for values in 0.25% increments above and below the claimed range. Specifically, outside of this range the closest increment is 0.50% below 1% and 1.00% above 2%. Moreover, it appears that the results obtained from 2% to 3% are similar to the results obtained in the claimed range. (See Declaration Figure 1).

Appellants must also explain why the showing is commensurate in scope with the claimed subject matter. See *In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980). These showings are especially relevant in this appeal where Pine discloses amounts of component (E) that encompass the claimed range (Answer, page 4), and the comparative data in the specification and the Takanashi Declaration is limited to specific water-soluble photosensitive resin compositions. In particular the compositions of the examples comprised 200 parts by weight of water, 200 parts by weight of polyvinyl alcohol (degree of saponification: 70%, degree of polymerization: 500) as component (A), 70 parts by weight of polyethylene glycol diacrylate as

component (B), 4 parts by weight of benzyldimethyl ketal. as component (c), and 0.1 part by weight of methylhydroquinone as component (D). However, the claims are not limited to these specific components or these amounts of the stated components.

Further, the claims encompass mixtures of *p*-toluenesulfonamide and *o*-toluenesulfonamide as component (E),<sup>4</sup> while the data presented does not provide results for such mixtures.

The Appellants also rely on the 37 CFR 1.132 declaration filed May 23, 2000, for substantiating the evidence of unexpected results. This declaration purports to present evidence directed to mixtures of *p*-toluenesulfonamide and *o*-toluenesulfonamide as component (E). Here again the declarant states that “[t]he object of the experiment is to show the criticality of the presently claimed range of 0 .001 - 0.3 wt.% of component (E) having the formula (I) of the present invention, and to support that unexpected results of the invention are exhibited only when component (E) is added in an amount [of] within the claimed range.” (Page 4). Thus, this declaration has several of the same deficiencies of the previously discussed declaration. For example, Appellants have not explained how the showing is commensurate in scope with the claimed subject matter, and the evidence of the declaration does not present a comparison for values in 0.25% increments above and below the claimed range. Further, the evidence in Table 1 of the

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<sup>4</sup> The description of component (E) as “at least one member selected from” includes the use of mixtures.

declaration exhibits reverse image depth ranging from about 44  $\mu\text{m}$  to 67  $\mu\text{m}$  for component (E) present in weight percent outside of the claimed range. These values are comparable to the values achieved for the range of 1- 2 wt.% of component (E) exhibited in the declaration filed September 25, 2000.

Appellants have not explained why the results achieved in the claimed range would have been unexpected to one of ordinary skill in the art, see *In re Freeman*, 474 F.2d 1318, 1324, 177 USPQ 139, 143 (CCPA 1973). This is especially significant in this case where the statements of unexpected results in the declarations do not attribute the results achieved to the presently claimed invention.

The Examiner rejected claims 1, 3 and 4 under 35 U.S.C. § 103 over Tanaka and Kunita. We affirm.

Appellants acknowledge that Tanaka discloses water-soluble photosensitive resin compositions containing 0.5 to 10 parts by weight of *p*-toluenesulfonamide, and Kunita discloses use of a thermal polymerization inhibitor. (Brief, p. 8). However, Appellants argue that the relevant disclosures of Tanaka are limited only to the fact that *p*-toluenesulfonamide is incorporated so as to obtain improved adhesion of the compound to the substrate and that Tanaka is silent about the effects of the present invention. Thus, Appellants conclude that "those skilled in the art would not be motivated to make the present invention by use of the respective components in the defined ranges, so as to yield the effects of the present invention." (Brief, p. 8).

Tanaka does provide motivation for incorporating *p*-toluenesulfonamide in the amounts required by the claimed invention even if for a different purpose than that intended by Appellants. The motivation for using *p*-toluenesulfonamide does not have to be the same as disclosed by Appellants to establish obviousness. See *In re Kemps*, 97 F.3d 1427, 1430, 40 USPQ2d 1309, 1311 (Fed. Cir. 1996).

The Appellants also rely on the evidence of unexpected results discussed above to rebut the Examiner's *prima facie* determination. (Brief, p. 8). This evidence is not persuasive for the reasons stated above.

The Examiner added the teachings of Ichikawa to the combination of Tanaka and Kunita to reject the subject matter of claim 5. The Examiner has presented factual determinations regarding the suitability of combining the teachings of the Ichikawa reference with Tanaka and Kunita. The Examiner's determinations seem reasonable and are based upon the evidence of record. Since Appellants have failed specifically to challenge these factual determinations, we presume that they are in agreement with the Examiner. Thus, for the reasons presented above regarding claim 1 and the reasons presented by the Examiner we will uphold the rejection.

#### CONCLUSION

For the foregoing reasons and those set forth in the Answer, giving due weight to Appellants' arguments, we determine that the preponderance of evidence weighs in favor of the Examiner's rejections. Accordingly, the Examiner's rejections under 35 U.S.C. § 103(a) are affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(iv)(effective Sep. 13, 2004; 69 Fed. Reg. 49960 (Aug. 12, 2004); 1286 Off. Gaz. Pat. Office 21 (Sep. 7, 2004)).

**Affirmed**

Beverly A. Franklin  
BEVERLY A. FRANKLIN  
Administrative Patent Judge

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